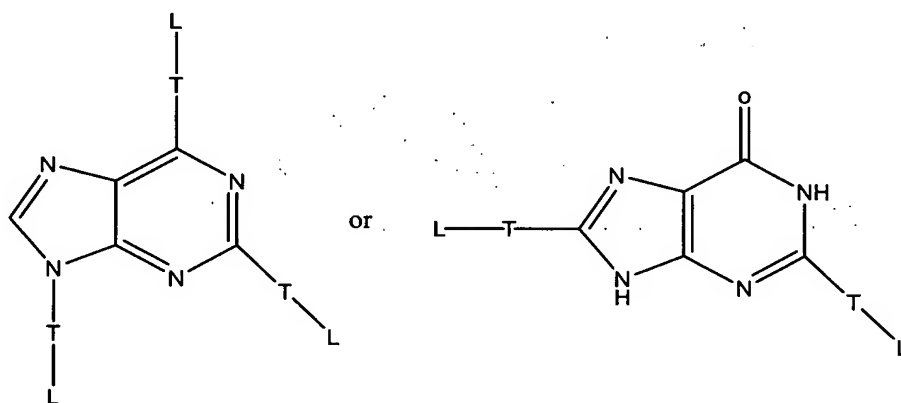


This listing of claims will replace all prior versions, and listings, of claims in the application.

Listing of Claims:

1-30 (Canceled)

31. (Currently amended) A method for preparing a library of compounds of the formula



wherein:

each tether moiety T is -NH(R¹)NH-, -NH(R¹)O-, -NHR²NH-, -NHR²SO₂NH-, -NHR¹-, -N(R⁴)₂-, -N=N-, O, S, Se, -P(=O)(O)₂-, NH, OR², OR³, malonato, pyrrolidinyl, piperidinyl, piperazinyl, morpholino, imidazolyl, pyrrolyl, pyrazolyl, indolyl, 1H-indolyl, α -carbolinyl, carbazolyl, phenothiazinyl, phenoxazinyl, tetrazolyl, or triazolyl;

R¹ is alkylene; R² is aryl; R³ is H or C₁-C₁₀ alkyl; R⁴ is alkyleneoxy; and

each chemical substituent L is, independently, C₁-C₁₀ alkyl, substituted C₁-C₁₀ alkyl, C₂-C₁₀ alkenyl, substituted C₂-C₁₀ alkenyl, C₂-C₁₀ alkynyl, substituted C₂-C₁₀ alkynyl, C₄-C₇ carbocyclic alkyl, substituted C₄-C₇ carbocyclic alkyl, C₄-C₁₀ alkenyl carbocyclic, substituted C₄-C₁₀ alkenyl carbocyclic, C₄-C₁₀ alkynyl carbocyclic, substituted C₄-C₁₀ alkynyl carbocyclic, C₆-C₁₄ aryl, substituted C₆-C₁₄ aryl, heteroaryl, substituted heteroaryl, a nitrogen, oxygen or sulfur containing heterocycle, a substituted nitrogen, oxygen or sulfur containing heterocycle, a mixed heterocycle, or a substituted mixed heterocycle; wherein each of the substituent groups is selected from a group consisting of alkyl, alkenyl, alkynyl, aryl, hydroxyl, alkoxy, benzyl, nitro, thiol, thioalkyl, thioalkoxy and halo; or L is, independently, phthalimido, an ether having 2 to 10 carbon atoms and 1 to 4 oxygen or sulfur atoms, hydrogen, halogen, hydroxyl, thiol, keto, carboxyl, NR¹R², CONR¹, amidine, guanidine, glutamyl, nitro, nitrate, nitrile, trifluoromethyl, trifluoromethoxy, NH-alkyl, N-dialkyl, O-aralkyl, S-aralkyl, NH-aralkyl, azido, hydrazino, hydroxylamino, sulfoxide, sulfone, sulfide, disulfide, silyl, a nucleosidic base, an amino acid side chain, or a carbohydrate, comprising:

contacting a purine ~~or pyrimidine~~ heterocyclic scaffold having at least two functionalizable atoms, wherein at least one of said functionalizable atoms is blocked, with a mixture of at least six different chemical substituents to append each of said chemical substituents to said heterocyclic scaffold directly to form a substituent-appended scaffold;

deblocking at least one of said blocked functionalizable atoms of said substituent-appended scaffold; and

contacting said substituent-appended scaffold with a mixture of at least six different chemical substituents to append each of said chemical substituents to said substituent-appended scaffold either directly or via a tether moiety covalently attached to one of said functionalizable atoms.

32. (Previously presented) The method of claim 31 wherein said compounds of said library are within 20 mole percent of equimolarity.

33. (Previously presented) The method of claim 31 wherein said contacting steps are carried out in one reaction vessel.

34. (Canceled)

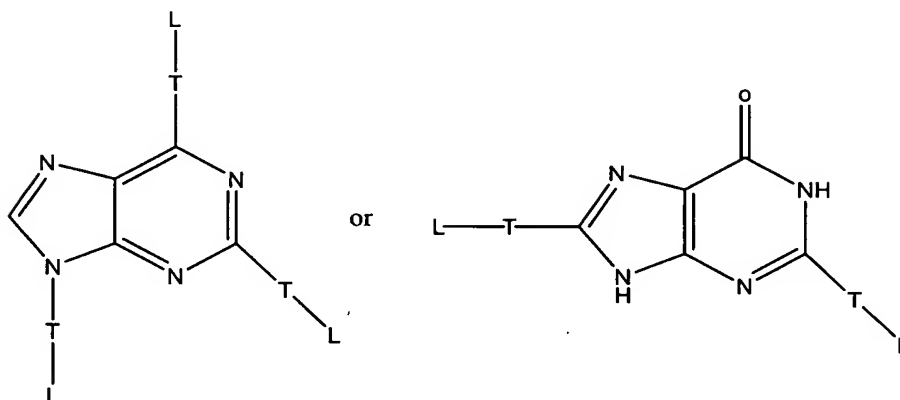
35. (Previously presented) The method of claim 31 wherein said scaffold is contacted with a mixture of at least ten different chemical substituents.

36. (Previously presented) The method of claim 31 wherein said scaffold is contacted with a mixture of at least fifteen different chemical substituents.

37. (Previously presented) The method of claim 31 wherein said method is performed

in solution phase.

38. (Currently amended) A method for preparing a library of compounds of the formula:



wherein:

each tether moiety T is -NH(R¹)NH-, -NH(R¹)O-, -NHR²NH-, -NHR²SO₂NH-, -NHR¹-, -N(R⁴)₂-, -N=N-, O, S, Se, -P(=O)(O)₂-, NH, OR², OR³, malonato, pyrrolidinyl, piperidinyl, piperazinyl, morpholino, imidazolyl, pyrrolyl, pyrazolyl, indolyl, 1H-indolyl, α -carbolinyl, carbazolyl, phenothiazinyl, phenoxazinyl, tetrazolyl, or triazolyl;

R¹ is alkylene; R² is aryl; R³ is H or C₁-C₁₀ alkyl; R⁴ is alkyleneoxy; and

each chemical substituent L is, independently, C₁-C₁₀ alkyl, substituted C₁-C₁₀ alkyl, C₂-C₁₀ alkenyl, substituted C₂-C₁₀ alkenyl, C₂-C₁₀ alkynyl, substituted C₂-C₁₀ alkynyl, C₄-C₇ carbocyclic

alkyl, substituted C₄-C₇ carbocyclic alkyl, C₄-C₁₀ alkenyl carbocyclic, substituted C₄-C₁₀ alkenyl carbocyclic, C₄-C₁₀ alkynyl carbocyclic, substituted C₄-C₁₀ alkynyl carbocyclic, C₆-C₁₄ aryl, substituted C₆-C₁₄ aryl, heteroaryl, substituted heteroaryl, a nitrogen, oxygen or sulfur containing heterocycle, a substituted nitrogen, oxygen or sulfur containing heterocycle, a mixed heterocycle, or a substituted mixed heterocycle; wherein each of the substituent groups is selected from a group consisting of alkyl, alkenyl, alkynyl, aryl, hydroxyl, alkoxy, benzyl, nitro, thiol, thioalkyl, thioalkoxy and halo; or L is, independently, phthalimido, an ether having 2 to 10 carbon atoms and 1 to 4 oxygen or sulfur atoms, hydrogen, halogen, hydroxyl, thiol, keto, carboxyl, NR¹R², CONR¹, amidine, guanidine, glutamyl, nitro, nitrate, nitrile, trifluoromethyl, trifluoromethoxy, NH-alkyl, N-dialkyl, O-aralkyl, S-aralkyl, NH-aralkyl, azido, hydrazino, hydroxylamino, sulfoxide, sulfone, sulfide, disulfide, silyl, a nucleosidic base, an amino acid side chain, or a carbohydrate, comprising:

contacting a purine ~~or pyrimidine~~ heterocyclic scaffold having at least two functionalizable atoms, wherein at least one of said functionalizable atoms is blocked, with a mixture of at least six different chemical substituents to append each of said chemical substituents to said heterocyclic scaffold via a tether moiety covalently attached to one of said functionalizable atoms to form a substituent-appended scaffold;

deblocking at least one of said blocked functionalizable atoms of said substituent-appended scaffold; and

contacting said substituent-appended scaffold with a mixture of at least six different chemical

substituents to append each of said chemical substituents to said substituent-appended scaffold either directly or via a tether moiety covalently attached to one of said functionalizable atoms.

39. (Previously presented) The method of claim 38 wherein said compounds of said library are within 20 mole percent of equimolarity.

40. (Previously presented) The method of claim 38 wherein said contacting steps are carried out in one reaction vessel.

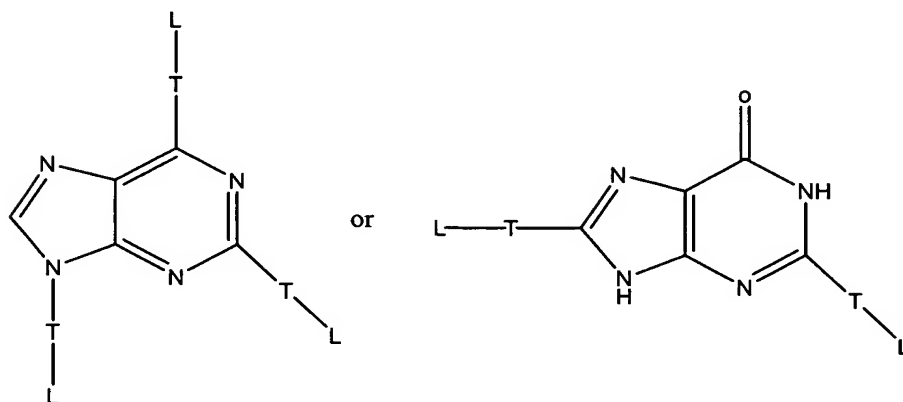
41. (Canceled)

42. (Previously presented) The method of claim 38 wherein said scaffold is contacted with a mixture of at least ten different chemical substituents.

43. (Previously presented) The method of claim 38 wherein said scaffold is contacted with a mixture of at least fifteen different chemical substituents.

44. (Previously presented) The method of claim 38 wherein said method is performed in solution phase.

45. (Currently amended) A method for preparing a library of compounds of the formula:



wherein:

each tether moiety T is -NH(R¹)NH-, -NH(R¹)O-, -NHR²NH-, -NHR²SO₂NH-, -NHR¹-, -N(R⁴)₂-, -N=N-, O, S, Se, -P(=O)(O)₂, NH, OR², OR³, malonato, pyrrolidinyl, piperidinyl, piperazinyl, morpholino, imidazolyl, pyrrolyl, pyrazolyl, indolyl, 1H-indolyl, α-carbolinyl, carbazolyl, phenothiazinyl, phenoxazinyl, tetrazolyl, or triazolyl;

R¹ is alkylene; R² is aryl; R³ is H or C₁-C₁₀ alkyl; R⁴ is alkyleneoxy; and

each chemical substituent L is, independently, C₁-C₁₀ alkyl, substituted C₁-C₁₀ alkyl, C₂-C₁₀ alkenyl, substituted C₂-C₁₀ alkenyl, C₂-C₁₀ alkynyl, substituted C₂-C₁₀ alkynyl, C₄-C₇ carbocyclic alkyl, substituted C₄-C₇ carbocyclic alkyl, C₄-C₁₀ alkenyl carbocyclic, substituted C₄-C₁₀ alkenyl carbocyclic, C₄-C₁₀ alkynyl carbocyclic, substituted C₄-C₁₀ alkynyl carbocyclic, C₆-C₁₄ aryl,

substituted C₆-C₁₄, aryl, heteroaryl, substituted heteroaryl, a nitrogen, oxygen or sulfur containing heterocycle, a substituted nitrogen, oxygen or sulfur containing heterocycle, a mixed heterocycle, or a substituted mixed heterocycle; wherein each of the substituent groups is selected from a group consisting of alkyl, alkenyl, alkynyl, aryl, hydroxyl, alkoxy, benzyl, nitro, thiol, thioalkyl, thioalkoxy and halo; or L is, independently, phthalimido, an ether having 2 to 10 carbon atoms and 1 to 4 oxygen or sulfur atoms, hydrogen, halogen, hydroxyl, thiol, keto, carboxyl, NR¹R², CONR¹, amidine, guanidine, glutamyl, nitro, nitrate, nitrile, trifluoromethyl, trifluoromethoxy, NH-alkyl, N-dialkyl, O-aralkyl, S-aralkyl, NH-aralkyl, azido, hydrazino, hydroxylamino, sulfoxide, sulfone, sulfide, disulfide, silyl, a nucleosidic base, an amino acid side chain, or a carbohydrate, comprising:
contacting a purine ~~or pyrimidine~~ heterocyclic scaffold molecule having a plurality of functionalizable atoms with a mixture of at least six different chemical substituents in one reaction vessel to append each of said chemical substituents to said scaffold either directly or via a tether moiety covalently attached to one of said functionalizable atoms.

46. (Previously presented) The method of claim 45 wherein said compounds of said library are within 20 mole percent of equimolarity.

47. (Canceled)

48. (Previously presented) The method of claim 45 wherein said scaffold is contacted with a mixture of at least ten different chemical substituents.

49. (Previously presented) The method of claim 45 wherein said scaffold is contacted with a mixture of at least fifteen different chemical substituents.

50. (Previously presented) The method of claim 45 wherein said method is performed in solution phase.